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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,776	06/30/2003	Kei Yamamoto	204552028900	8129

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EXAMINER

FLORES RUIZ, DELMA R

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,776

Applicant(s)

YAMAMOTO ET AL.

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-22 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3, and 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga (6,396,863) in view of Serreze (5,222,090).

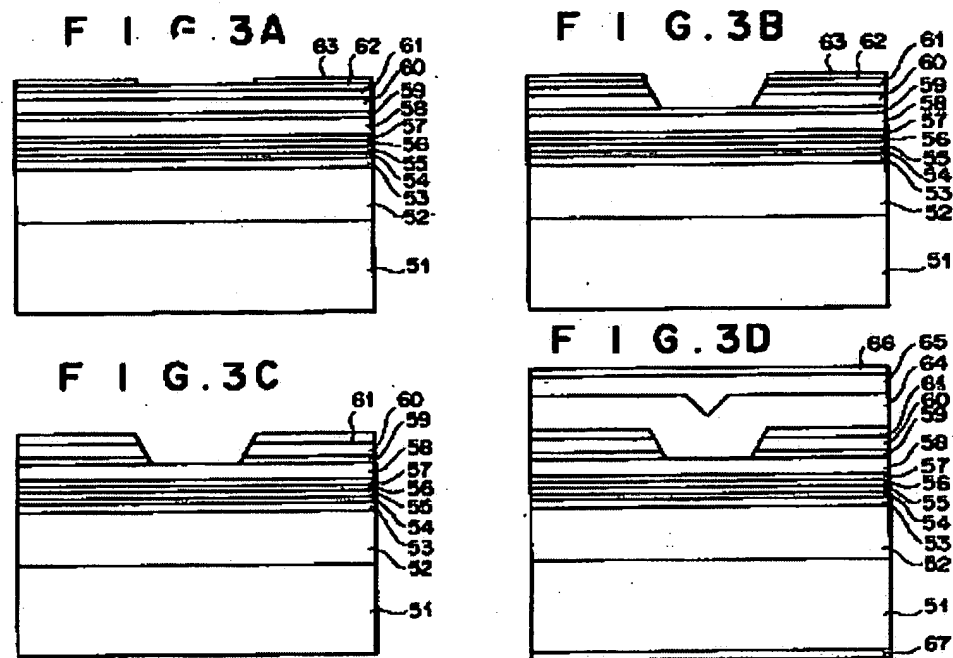
Regarding claim 1, Fukunaga discloses semiconductor laser comprising; a lower clad layer (see Fig. 3B, Character 52) a lower guide layer (reference call “waveguide”, see Fig. 3B, Character 53), an active region (see Fig. 3B, Characters 54 – 56) and upper guide layer (see Fig. 3B, Character 57) and an upper clad layer (see Fig. 3B, Character 58) are supported by GaAs substrate (see Fig. 3B Character 51), the active region having a quantum well (see Fig. 3B, Characters 55) structure in which one or more well layers (see Fig. 3B Character 55) and barrier layers (see Fig. 3B, Characters 54,56) are stacked, wherein said one or more well layer and said barrier layer are formed of any one of InGaP, InGaAsP and GaAsP (Column 9, Lines 1 –2) and

upper and/or lower guide layer is formed of $\text{Al}_z\text{Ga}_{1-z}\text{As}$ ($0.20 < z < 1$) ((Column 8, Lines 64, and Column 11, Lines 5 – 11). The concentration ($0.20 < z < 1$) is not explicitly disclosed. However it was shown above that Fukunaga teach in Column 8, Lines 64, and Column 11, Lines 5 – 11, the guide is formed of $\text{Al}_z\text{Ga}_{1-z}\text{As}$ ($0 \leq z \leq 0.2$). Due to the use of these concentrations, it is inherent that material can change to different concentrations or composition to guiding the layer).

Fukunaga discloses the claimed invention except for semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm. However, it is well know in the art for the high power semiconductor laser device to have an oscillation wavelength larger than 760nm and smaller than 800nm as discloses by Serreze in Column 1, Lines 6 – 10 and 63 – 68. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine semiconductor laser device of Serreze with the semiconductor laser device of Fukunaga because it would provide a high power semiconductor laser device with low threshold current, Column 1, Lines 6 -10.

Regarding claim 2, Fukunaga discloses the claimed invention except for and a value of z representing a mole fraction of Al in the group-III elements of said upper and/or guide layer is larger than 0.25 ((Column 8, Lines 64, and Column 11, Lines 5 – 11). The concentration ($0.20 < z < 1$) is not explicitly disclosed. However it was shown above that Fukunaga teach in Column 8, Lines 64, and Column 11, Lines 5 – 11, the

guide is formed of $\text{Al}_z\text{Ga}_{1-z}\text{As}$ ($0 \leq z \leq 0.2$). Due to the use of these concentrations, it is inherent that material can change to different concentrations or composition to guiding the layer).



Regarding claim 3, Fukunaga discloses a upper and lower cladding (see Fig. 3B, Characters 52 and 58) contain Al, and a value of z, wherein a value of z represent a mole fraction of Al in the group-III elements of said upper and/or lower guide layer, is smaller than a value of an Al mole fraction of said upper and lower clad layer (Column 8, Lines 62 – 63).

Regarding claim 5, Fukunaga discloses claimed invention except for a value of z, where a value of z represents a mole fraction of Al in the group-III elements of upper

and/ or lower guide layer, of at least a portion in contact with a barrier layer of said upper and/or guide layer is smaller than 0.4 ((Column 8, Lines 64, and Column 11, Lines 5 – 11). The concentration ($0.20 < z < 1$) is not explicitly disclosed. However it was shown above that Fukunaga teach in Column 8, Lines 64, and Column 11, Lines 5 – 11, the guide is formed of $\text{Al}_z\text{Ga}_{1-z}\text{As}$ ($0 \leq z \leq 0.2$). Due to the use of these concentrations, it is inherent that material can change to different concentrations or composition to guiding the layer).

Regarding claim 6, Fukunaga discloses a one or more well layers have a compressive stain (see Fig. 3B, Characters 55, Column 8, Line 66 – 67).

Regarding claim 7, Fukunaga discloses barrier layer have a tensile strain (see Fig. 3B Character 56, Column 9, Lines 1 – 2).

Regarding claim 8, Fukunaga discloses a semiconductor laser is a light-emitting device (see Fig.3A-D, Column 1, Lines 8 – 11).

Response to Arguments

Applicant's arguments with respect to claims 1 – 22 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 9 – 22 are allowed.

The following is an examiner's statement of reasons for allowance: Claim 9 recites a semiconductor laser structure including the specific structure limitation of barrier layer are formed of an $\text{In}_{1-x}\text{Ga}_x\text{As}_{1-y}\text{P}_y$ having a band gap energy larger than that of said well layers, and there hold relationship that $0 < x < 1$; $0.02 < y < 0.75$ and $|(a_2 - a_1) / a_1| * 100 \geq 0.65$, where a_1 is lattice constant of said one or more well layers, and a_2 is lattice constant of said barrier layers, which is neither anticipated or disclosed nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Delma R. Flores Ruiz
Examiner
Art Unit 2828
DRFR/MH
August 21, 2006


Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828